



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

| APPLICATION NO.            | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|----------------------------|-------------|----------------------|---------------------|------------------|
| 10/619,531                 | 07/15/2003  | Doni S. Dattani      | 03-0444 1496.00308  | 7492             |
| 22501                      | 7590        | 08/06/2008           |                     |                  |
| CHRISTOPHER P MAIORANA, PC |             |                      |                     |                  |
| LSI Corporation            |             |                      |                     |                  |
| 24840 HARPER               |             |                      |                     |                  |
| SUITE 100                  |             |                      |                     |                  |
| ST CLAIR SHORES, MI 48080  |             |                      |                     |                  |
| EXAMINER                   |             |                      |                     |                  |
| HUBER, JEREMIAH C          |             |                      |                     |                  |
| ART UNIT                   |             | PAPER NUMBER         |                     |                  |
| 2621                       |             |                      |                     |                  |
| MAIL DATE                  |             | DELIVERY MODE        |                     |                  |
| 08/06/2008                 |             | PAPER                |                     |                  |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/619,531

**Applicant(s)**

DATTANI ET AL.

**Examiner**

JEREMIAH C. HUBER

**Art Unit**

2621

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 April 2008.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9, 12, 13, 15-18 and 20-24 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-9, 12, 13, 15-18 and 20-24 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 15 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-9, 12, 13, 15-18 and 20-24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims as amended recite a plurality of prediction types and subsets of predictors. The applicant points to various portions of the specification in support of the claim amendments including page 22 lines 15-18, page 29 line 14 to page 30 line 9, page 32 lines 1-10 and page 34 lines 13-15. Page 22 lines 15-18 disclose that the outputs of a quantization, motion estimation and inter processing circuits may be presented together with a mode information signal INT2 as a signal CTR1. Page 29 line 14 to page 30 line 9 discloses determining the availability of reconstructed samples for generating sums S0-S3. Page 32 lines 1-10 discloses a table of prediction formulas and indicates that predictors are generated using these formulas. Finally, page 34 lines 13-15 indicate that predictors are uniquely determined for each 4x4 sub-block using as many available samples as possible. However, the examiner is unable to find mention of prediction type, or subsets, in the cited portions or anywhere else in the specification.

In light of the applicant's remarks the examiner believes the applicant intends a prediction type to include the formulas under a particular Pred(0-3) column of table 1 on page 32 of the specification and further that a subset is a group of blocks predicted using one of the columns. However, the specification provides no definition for type or subgroup in terms of table 1. Neither would it be apparent to one of ordinary skill in the art to attach this particular meaning to the table, because the type of prediction for all entries of table 1 is DC prediction only the particular values as predictors differ. The claims will be interpreted as best understood by the examiner.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 21 and 23 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims recite third, fourth and fifth subsets predicted using different prediction types. As stated above, the specification does not define prediction types or subsets. However, in light of the applicant's remarks the examiner believes the applicant intends a subset to include the blocks predicted using formula under a particular Pred(0-3) column of table 1 on page 32 of the specification. In this case only 4 blocks, A-D, exist to predict and it is impossible to have five subsets rendering the claims indefinite. The applicant may intend to indicate that three different Pred columns are used to predict the blocks when two sum values are unavailable. The claims will be viewed using this understanding.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-2 and 5-9, 12, 13, 15, 16, 20, 22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sun (20030202705) in view of "Working Draft Number 2 Revision 2" (hereafter WD2).

In regard to claim 1 Sun discloses an apparatus including:

a first processing circuit configured to generate a plurality of reconstructed samples in response to a plurality of macroblocks of an input signal (Sun Fig. 1 note dequantization (Q-1), inverse transform (T-1), adder (+) and frame buffer and par. 12 note reconstruction path).

a second processing circuit configured to determine an intra prediction predictor for a current macroblock in response to available reconstructed samples adjacent to the current macroblock (Sun Fig 1 note Intra MB section par. 12 intra mode).

It is noted that Sun does not disclose details related to chroma sub-blocks. However WD2 discloses a method of providing a intra prediction DC predictor for each 4x4 chroma sub-block wherein each of the intra DC predictors of a first type are generated in response to four adjacent samples when all four adjacent samples are present (WD2 sections 4.4.2-4.4.5 pages 28 to 33 particularly page 33 section 4.4.4.1.3

note when all samples S0-S3 are present all blocks A-D are predicted with a prediction type that uses closest possible samples, e.g. D is predicted using S1 and S3 because both are equally close) and

predictors of a first and second type are generated for first and second subsets when one predictor is unavailable (WD2 sections 4.4.2-4.4.5 pages 28 to 33 particularly page 33 section 4.4.4.1.3 note when one sample e.g. S2 is unavailable one subset A, B and D are predicted with a prediction type that uses closest possible samples while the second subset, C, is predicted with a second prediction type that does not use the closest possible sample). It is therefore considered obvious that one of ordinary skill in the art at the time of the invention would recognize the advantage of including chroma sub-block intra prediction as disclosed by WD2 in the apparatus of Sun in order to improve coding efficiency.

It is further noted that the claim indicates that prediction types are selected when a 'single one' of the sums is unavailable. However, the claims proceed under the inclusive term comprising which does not exclude more than one sum being unavailable as in the case of WD2 (WD2 section 4.4.4).

In regard to claim 2 refer to the statements made in the rejection of claim 1 above. Sun further discloses that the second processing circuit is implement in the decoding loop of an encoder (Sun Fig. 1 and par. 12note intra MB section is part of the reconstruction, or decoding loop.).

In regard to claim 5 refer to the statements made in the rejection of claim 1 above. WD2 further discloses that intra predicted sub-blocks are generated in response to predictors (WD2 page 33 section 4.4.4.1.3 note S0-S3)

In regard to claim 6 refer to the statements made in the rejection of claim 5 above. WD2 further discloses that the predictors are generated in response to reconstructed samples (WD2 page 33 section 4.4.4.1.3 note S0-S3 are the sums of 4 neighboring pixels).

In regard to claims 7-9 refer to the statements made in the rejection of claim 6 above. WD2 further discloses that reconstructed samples are formed from both a row adjacent to the top edge and a column adjacent to the left edge of the chroma block (WD2 page 33 section 4.4.4.1.3 note figure 8).

In regard to claims 12-13 refer to the statements made in the rejection of claims 1 and 6-11 above. WD2 further discloses that there is only one mode for chroma prediction, which following the WD2 naming convention would be the 0<sup>th</sup> mode (WD2 page 33 section 4.4.4.1.3 note first sum of neighboring pixels is labeled S0 rather than S1).

In regard to claim 15 refer to the statements made in the rejection of claim 13 above. WD2 further discloses that predictors are selected independently for each sub-block (WD2 page 33 section 4.4.4.1.3 note when all predictors are present sub-blocks A, B, C, and D each receive different values).

In regard to claim 16 refer to the statements made in the rejection of claim 13 above. Sun further discloses inverse quantization and inverse transformation (Sun Fig.

1 note dequantization (Q-1), inverse transform (T-1), adder (+) and frame buffer and par.

In regard to claim 20 refer to the statements made in the rejection of claim 13 above. WD2 further discloses that the best predictor is a weighted average of one or more corresponding sums (WD2 page 33 section 4.4.4.1.3 note best predictor occurs when S0-S3 are present, also note A is the weighted average of S0 and S2 with each weight of 1).

In regard to claims 22 and 24 refer to the statements made in the rejection of claims 1 and 13 above. Sun further discloses generating mode information identifying prediction type (Sun Figs. 2-3 and pars. 43 and 46note prediction information indicates intra mode).

2. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sun in view of WD2 as applied to claim 1 above, and further in view of Joch et al (20040101059).

Sun further discloses that the encoder conforms to the H.264 standard (Sun Fig. 1 and par. 12). It is noted that neither Sun nor WD2 explicitly disclose details of a decoder. However decoding is substantially the inverse operation of encoding, and at the time of the invention it would have been obvious to one of ordinary skill in the art to arrange the components disclosed by Sun and WD2 in order to implement an H.264 compliant decoder to decode an H.264 compliant bitstream encoded by the encoder of Sun in view of WD2 as is shown by Joch (Joch Fig. 4 and pars. 62-73).



### ***Response to Arguments***

Applicant's arguments with respect to claims 1-9, 12, 13, 15-18, and 20-24 have been considered but are moot in view of the new ground(s) of rejection.

The applicant asserts that Sun in view of WD2 fails to disclose prediction in a case where a single missing sum of S0-S3 is unavailable. The examiner appreciates the applicant's attempt to limit the invention. However, as stated in the rejection of claim 1, due to the inclusive nature of the claims, the examiner does not believe that the applicant has properly claimed what is believed to be intended. After consultation with a supervisor, the examiner suggests the language "when only a single one" of the samples is available or perhaps "when 3 of 4 samples are available" in order to achieve the desired exclusivity.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

Art Unit: 2621

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JEREMIAH C. HUBER whose telephone number is (571)272-5248. The examiner can normally be reached on Mon-Fri 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571)272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jeremiah C Huber  
Examiner  
Art Unit 2621

Art Unit: 2621

/Jeremiah C Huber/  
Examiner, Art Unit 2621

/Young Lee/  
Primary Examiner, Art Unit 2621